WHAT IS CLAIMED IS:

1. A light modulator modulating light by changing a reflection direction of incident light, comprising:

a light reflection film regularly reflecting incident light;

a center beam which is formed out of a thin film constituted to be combined with said light reflection film, which has both ends fixed, and which is deformed by an electronic force, said reflection film provided on one surface of said center beam;

a substrate electrode which is opposed to said center beam through a gap formed on the other surface of said center beam;

an opposed surface which is a surface of said substrate electrode opposed to said center beam modulating the incident light on said light reflection film, said opposed surface restricting deformation of said center beam due to application of a driving voltage to said substrate electrode by abutting on said center beam; and

a substrate which has said substrate electrode having said opposed surface, formed in a concave section, and which holds a to-be-held section of said center beam.

2. The light modulator according to claim 1, wherein

said light reflection film is formed out of a metallic thin film.

3. The light modulator according to claim 1, wherein said center beam is formed out of a low resistance material.

4. The light modulator according to claim 3, wherein the low resistance material of said center beam is formed by decreasing resistance of silicon by diffusing impurities into said silicon.

5. The light modulator according to claim 1, wherein said center beam is formed out of a monocrystalline silicon film.

6. The light modulator according to claim 1, wherein said center beam is formed out of a polycrystalline silicon film.

7. The light modulator according to claim 1, wherein said center beam is formed out of a silicon nitride thin film.

8. The light modulator according to claim 1, wherein two edges on the both ends, opposed each other, of the to-be-held section of said center beam are fixed to the substrate.

9. The light modulator according to claim 1, wherein

a distance between one edge and the other edge of the two edges on the both ends, opposed each other, of said center beam held by the substrate is fixed to be equal to or larger than a length of one of said one edge and said other edge of said two edges.

10. The light modulator according to claim 1, wherein

a plurality of light reflection films, a plurality of center beams and a plurality of substrate electrodes are arranged in a form of a one-dimensional array on said substrate.

11. The light modulator according to claim 1, wherein

a plurality of light reflection films, a plurality of center beams and a plurality of substrate electrodes are arranged in a form of a two-dimensional array on said substrate.

12. The light modulator according to claim 1, wherein

the opposed surface of said substrate electrode consists of a parallel opposed surface which is a parallel surface opposed to said center beam.

13. The light modulator according to claim 1, wherein

the opposed surface of said substrate electrode consists of a partially non-parallel opposed surface which is a partially non-parallel surface opposed to said center beam.

14. The light modulator according to claim 1, wherein the opposed surface of said substrate electrode consists of a plurality of non-parallel opposed surfaces which are non-parallel surfaces opposed to said center beam.

15. The light modulator according to claim 1, wherein the opposed surface of said substrate electrode consists of an entirely non-parallel opposed surface which is an entirely non-parallel surface opposed to said center beam.

16. The light modulator according to claim 1, wherein said substrate is made of a light transmission glass material.

17. The light modulator according to claim 1, wherein said substrate is made of a monocrystalline silicon material.

18. The light modulator according to claim 17, wherein a part of or all of a driving circuit is formed in the monocrystalline silicon material of said substrate.

19. The light modulator according to claim 1, wherein the gap formed between said center beam held by said substrate and the substrate electrode opposed to said center beam and formed on the concave section of said substrate, consists of a non-parallel

inclined surface.

20. The light modulator according to claim 19, wherein the gap formed between said center beam and the substrate electrode opposed to said center beam and consisting of the non-parallel inclined surface, is shaped to be the largest in a central section of said center beam held by said substrate and to gradually enlarge from said two edges on the opposed both ends of said center beam toward said central section of said center beam.

21. The light modulator according to claim 19, wherein the gap formed between said center beam and the substrate electrode opposed to said center beam and consisting of the non-parallel, inclined surface, is shaped to be the largest in a central section of said center beam held by said substrate and to gradually enlarge from said two edges on the opposed both ends of said center beam and other two edges of said center beam toward said central section of said center beam.

22. The light modulator according to claim 19, wherein the gap formed between said center beam and the substrate electrode opposed to said center beam and consisting of the non-parallel, inclined surface, is shaped to be the largest near one of the two edges on the opposed both ends of said center beam held by said substrate and to gradually enlarge from the other edge

of said two edges on the opposed both ends of said center beam held by said substrate toward said one edge.

23. The light modulator according to claim 1, wherein the gap formed between said center beam and the substrate electrode opposed to said center beam, consists of a non-parallel inclined surface between two edges on the both ends, opposed each other, of said center beam held by the substrate.

24. The light modulator according to claim 23, wherein the gap formed between said center beam and the substrate electrode opposed to said center beam and consisting of the non-parallel inclined surface, is shaped to be the largest in a central section of said center beam held by said substrate and to gradually enlarge from said two edges on the opposed both ends of said center beam toward said central section of said center beam.

25. The light modulator according to claim 23, wherein the gap formed between said center beam and the substrate electrode opposed to said center beam and consisting of the non-parallel inclined surface, is shaped to be the largest in a central section of said center beam held by said substrate and to gradually enlarge from said two edges on the opposed both ends of said center beam and other two edges of said center beam toward said central section of said center beam.

26. The light modulator according to claim 23, wherein

the gap formed between said center beam and the substrate electrode opposed to said center beam and consisting of the non-parallel inclined surface, is shaped to be the largest near one of the two edges on the opposed both ends of said center beam held by said substrate and to gradually enlarge from the other edge of said two edges on the opposed both ends of said center beam held by said substrate toward said one edge.

27. The light modulator according to claim 1, wherein

the to-be-held section of said center beam held by the substrate consists of a plurality of divided to-be-held sections.

28. The light modulator according to claim 27, wherein

said divided to-be-held sections are arranged in a corner section of said center beam.

29. The light modulator according to claim 27, wherein

said divided to-be-held sections each has a connection section connected to said center beam having a smooth outline section.

30. The light modulator according to claim 1, wherein

the to-be-held section of said center beam held by the substrate consists of a folded structure section.

31. The light modulator according to claim 13, wherein

the to-be-held section of said center beam held by the substrate near a portion, in which a gap formed between at least said center beam and the substrate electrode opposed to said center beam and consisting of a non-parallel inclined surface has a largest clearance, consists of a plurality of divided to-be-held sections.

32. The light modulator according to claim 13, wherein

the to-be-held section of said center beam held by the substrate near a portion, in which a gap formed between at least said center beam and the substrate electrode opposed to said center beam and consisting of a non-parallel inclined surface has a largest clearance, consists of a folded structure section.

33. The light modulator according to claim 1, wherein

said center beam consists of a member having a tensile stress.

34. The light modulator according to claim 1, wherein

if combinations of thicknesses (t) of a plurality of members constituted to be combined with said center beam and stresses (s) including a tensile stress with a plus sign and a compressive stress with a minus sign are (t_1, s_1), (t_2, s_2), ... (t_n, s_n), said center beam satisfies $t_1 \cdot s_1 + t_2 \cdot s_2 + \ldots + t_n \cdot s_n \,/\, t_1 + t_2 + \ldots + t_n = 0$.

35. The light modulator according to claim 1, wherein said center beam has a relationship of $(t/1)^2 = s/E$ with respect to a tensile stress (s), a thickness (t), Young's modulus (E) of a formation material, a distance (1) between one edge and the other edge of two edges on the both ends, opposed each other, of said center beam.

36. The light modulator according to claim 1, wherein all of or a part of a driving circuit driving the center beam is formed on said substrate.

37. The light modulator according to claim 1, wherein said center beam is abutted on a surface of said substrate and deformed along a clearance shape of a gap formed on the other surface of said center beam by the electronic force generated by the application of the driving voltage to a portion between said center beam and said substrate electrode.

38. The light modulator according to claim 1, wherein after said center beam is deformed by the electronic force generated by the application of the driving voltage to a portion between said center beam and said substrate electrode, a voltage opposite in polarity to the driving voltage is applied to the portion between said center beam and said substrate electrode to an extent not to deform said center beam.

39. The light modulator according to claim 1, wherein

said center beam is deformed by alternately applying, as the driving voltage, a positive voltage and a negative voltage to a portion between said center beam and said substrate electrode with reference to a potential of said center beam.

40. A method of manufacturing a light modulator modulating light by changing a reflection direction of incident light, said light modulator comprising: a light reflection film regularly reflecting incident light; a center beam which is formed out of a thin film constituted to be combined with said light reflection film, which has both ends fixed, and which is deformed by an electronic force, said reflection film provided on one surface of said center beam; a substrate electrode which is opposed to said center beam through a gap formed on the other surface of said center beam; an opposed surface which is a surface of said substrate electrode opposed to said center beam modulating the incident light on said light reflection film, said opposed surface restricting deformation of said center beam due to application of a driving voltage to said substrate electrode by abutting on said center beam; and a substrate which has said substrate electrode having said opposed surface, formed in a concave section, and which holds a to-be-held section of said center beam, wherein

after forming the gap on said substrate, a sacrificial

material layer made of a sacrificial material is formed to flatten said substrate, said center beam is formed, and then said sacrificial material layer is removed to thereby manufacture said light modulator.

41. The method of manufacturing a light modulator according to claim 40 comprising:

a concave section formation step of forming the concave section on the substrate by a thin film formation method or a micromachining method;

a substrate electrode formation step of forming all of or a part of the substrate electrode in said concave section on said substrate;

a sacrificial material layer formation step of forming the sacrificial material layer made of the sacrificial material, in said concave section on said substrate;

a center beam formation step of forming the center beam on said sacrificial material layer; and

a sacrificial material layer removal step of removing said sacrificial material layer in said concave section.

42. The method of manufacturing a light modulator according to claim 40, wherein

said sacrificial material layer is a silicon oxide film.

43. The method of manufacturing a light modulator according to claim 40, wherein

said sacrificial material layer is one of a polycrystalline silicon film and an amorphous silicon film.

44. The method of manufacturing a light modulator according to claim 40, wherein

said sacrificial material layer is an organic material film.

45. A light information processing apparatus processing light information using a light modulator modulating light by changing a reflection direction of an incident light beam, comprising:

a plurality of light modulators each of which modulates the light by changing the reflection direction of an incident light beam, and each of which comprises: a light reflection film regularly reflecting incident light; a center beam which is formed out of a thin film constituted to be combined with said light reflection film, which has both ends fixed, and which is deformed by an electronic force, said reflection film provided on one surface of said center beam; a substrate electrode which is opposed to said center beam through a gap formed on the other surface of said center beam; an opposed surface which is a surface of said substrate electrode opposed to said center beam modulating the incident light on said light reflection film, said opposed surface restricting deformation of said center beam due to application of a driving voltage to said

substrate electrode by abutting on said center beam; and a substrate which has said substrate electrode having said opposed surface, formed in a concave section, and which holds a to-be-held section of said center beam; and

an independent driving unit which drives said plurality of light modulators independently of one another.

46. An image formation apparatus forming an image by wiring optical data by an electrophotographic process, comprising:

an image carrier which is rotatably held, and which carries a to-be-formed image;

a latent image formation unit which forms a latent image by writing the optical data on said image carrier, and which consists of a light modulator, said light modulator which modulates light by changing a reflection direction of incident light, and which comprises: a light reflection film regularly reflecting incident light; a center beam which is formed out of a thin film constituted to be combined with said light reflection film, which has both ends fixed, and which is deformed by an electronic force, said reflection film provided on one surface of said center beam; a substrate electrode which is opposed to said center beam through a gap formed on the other surface of said center beam; an opposed surface which is a surface of said substrate electrode opposed to said center beam modulating the incident light on said light reflection film, said opposed surface restricting deformation of said center beam

due to application of a driving voltage to said substrate electrode by abutting on said center beam; and a substrate which has said substrate electrode having said opposed surface, formed in a concave section, and which holds a to-be-held section of said center beam;

a development unit which develops the latent image formed by said light modulator of said latent image formation unit, and which forms a toner image; and

a transfer unit which transfers the toner image formed by said development unit onto a to-be-transferred body.

47. An image projection and display apparatus projecting and displaying an image, comprising:

a light switching unit which consists of a light modulator, said light modulator modulating light by changing a reflection direction of incident light, and comprising: a light reflection film regularly reflecting incident light; a center beam which is formed out of a thin film constituted to be combined with said light reflection film, which has both ends fixed, and which is deformed by an electronic force, said reflection film provided on one surface of said center beam; a substrate electrode which is opposed to said center beam through a gap formed on the other surface of said center beam; an opposed surface which is a surface of said substrate electrode opposed to said center beam modulating the incident light on said light reflection film, said opposed surface restricting deformation of said center beam due to application of a driving

voltage to said substrate electrode by abutting on said center beam; and a substrate which has said substrate electrode having said opposed surface, formed in a concave section, and which holds a to-be-held section of said center beam; and

a projection screen displaying the image projected by said light modulator of said light switching unit.

48. A light modulator modulating light by changing a reflection direction of incident light, comprising:

a reflection unit which regularly reflects light;

a thin film, both-end-fixed beam which is formed out of a thin film constituted to be combined with said reflection unit provided on one side surface of said thin film, both-end-fixed beam, which has both ends fixed, and which is deformed by an electronic force;

a substrate electrode which is opposed to said thin film, both-end-fixed beam, and which applies a driving voltage;

a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam, and which is formed on the other side surface of said thin film, both-end-fixed beam;

a substrate which has said substrate electrode formed on a bottom of said gap, formed in a concave section and which holds and fixes the both ends of said thin film, both-end-fixed beam; and

a hole section which is formed in said thin film,

both-end-fixed beam above said gap, and which makes a section of said thin film, both-end-fixed beam corresponding to said hole section deformed more easily than remaining sections of said hole section.

49. The light modulator according to claim 48, wherein the reflection unit is made of a metallic thin film.

50. The light modulator according to claim 48, wherein the thin film, both-end-fixed beam is made of monocrystalline silicon.

51. The light modulator according to claim 48, wherein the thin film, both-end-fixed beam is made of polycrystalline silicon.

52. The light modulator according to claim 48, wherein the thin film, both-end-fixed beam is made of silicon nitride.

53. The light modulator according to claim 48, wherein the gap is non-parallel between the thin film, both-end-fixed beam and the substrate electrode.

54. The light modulator according to claim 53, wherein the gap has an apex angle section on a substrate electrode-side bottom.

55. The light modulator according to claim 48, wherein the hole section is rectangular.

56. The light modulator according to claim 48, wherein the hole section is circular.

57. The light modulator according to claim 48, wherein a plurality of the hole sections are arranged in a direction equal to a tangential direction of a fixed end of the thin film, both-end-fixed beam.

58. The light modulator according to claim 48, wherein a plurality of the hole sections are arranged in a direction perpendicular to a tangential direction of a fixed end of the thin film, both-end-fixed beam.

59. The light modulator according to claim 48, wherein the hole section is arranged so that one of a long diameter direction and a long edge direction is equal to a tangential direction of a fixed end of the thin film, both-end-fixed beam.

60. The light modulator according to claim 48, wherein the hole section is arranged at an opposed position near an apex angle section of the gap.

61. The light modulator according to claim 48, wherein the reflection unit is arranged at a position of the hole section in contact with an edge.

62. A method of manufacturing a light modulator, said light modulator modulating light by changing a reflection direction of incident light and comprising: a reflection unit which regularly reflects light; a thin film, both-end-fixed beam which is formed out of a thin film constituted to be combined with said reflection unit provided on one side surface of said thin film, both-end-fixed beam, which has both ends fixed, and which is deformed by an electronic force; a substrate electrode which is opposed to said thin film, both-end-fixed beam, and which applies a driving voltage; a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam, and which is formed on the other side surface of said thin film, both-end-fixed beam; a substrate which has said substrate electrode formed on a bottom of said gap, formed in a concave section and which holds and fixes the both ends of said thin film, both-end-fixed beam; and a hole section which is formed in said thin film, both-end-fixed beam above said gap, and which makes a section of said thin film, both-end-fixed beam

corresponding to said hole section deformed more easily than remaining sections of said hole section, wherein

after forming a gap, which become the gap, on said substrate, a sacrificial material layer made of a sacrificial material is formed to flatten said substrate, said thin film, both-end-fixed beam and said hole section are formed, and then said sacrificial material layer is removed to thereby manufacture said light modulator.

63. The method of manufacturing a light modulator according to claim 62, comprising:

a concave section formation step of forming the concave section, which becomes the gap, on the substrate by a thin film formation method or a micromachining method;

a substrate electrode formation step of forming all of or a part of the substrate electrode in said concave section on said substrate;

a sacrificial material layer formation step of forming the sacrificial material layer made of the sacrificial material, in said concave section on said substrate;

a flattening step of polishing and flattening said sacrificial material layer;

a thin film, both-end-fixed beam formation step of forming the thin film, both-end-fixed beam and the hole section on said sacrificial material layer; and

a sacrificial material layer removal step of removing said

sacrificial material layer in the concave section on said substrate.

64. An image formation apparatus forming an image by wiring optical data by an electrophotographic process, comprising:

an image carrier which is rotatably held, and which carries a to-be-formed image;

a latent image formation unit which forms a latent image by writing the optical data on said image carrier, and which consists of a light modulator, said light modulator which modulates light by changing a reflection direction of incident light, and which comprises: a reflection unit which regularly reflects light; a thin film, both-end-fixed beam which is formed out of a thin film constituted to be combined with said reflection unit provided on one side surface of said thin film, both-end-fixed beam, which has both ends fixed, and which is deformed by an electronic force; a substrate electrode which is opposed to said thin film, both-end-fixed beam, and which applies a driving voltage; a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam, and which is formed on the other side surface of said thin film, both-end-fixed beam; a substrate which has said substrate electrode formed on a bottom of said gap, formed in a concave section and which holds and fixes the both ends of said thin film, both-end-fixed beam; and a hole section which is formed in said thin film, both-end-fixed beam above said gap, and which makes a section of said thin film, both-end-fixed beam

corresponding to said hole section deformed more easily than remaining sections of said hole section;

a development unit which develops the latent image formed by said light modulator of said latent image formation unit, and which forms a toner image; and

a transfer unit which transfers the toner image formed by said development unit onto a to-be-transferred body.

65. An image projection and display apparatus projecting and displaying an image, comprising:

a light switching unit which consists of a light modulator, said light modulator which modulates light by changing a reflection direction of incident light, and which comprises: a reflection unit which regularly reflects light; a thin film, both-end-fixed beam which is formed out of a thin film constituted to be combined with said reflection unit provided on one side surface of said thin film, both-end-fixed beam, which has both ends fixed, and which is deformed by an electronic force; a substrate electrode which is opposed to said thin film, both-end-fixed beam, and which applies a driving voltage; a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam, and which is formed on the other side surface of said thin film, both-end-fixed beam; a substrate which has said substrate electrode formed on a bottom of said gap, formed in a concave section and which holds and fixes the both ends of said thin film, both-end-fixed beam; and a hole

section which is formed in said thin film, both-end-fixed beam above said gap, and which makes a section of said thin film, both-end-fixed beam corresponding to said hole section deformed more easily than remaining sections of said hole section; and

a projection screen displaying the image projected by said light modulator of said light switching unit.

66. A light modulator modulating light by deforming a beam which reflects light, by an electrostatic force, wherein

an electrode acting the electrostatic force on said beam is provided inside a recess of a substrate opened to an upper surface of said substrate, said beam held by said substrate at a position opposed to said electrode so as to be projected from the upper surface of said substrate; and

a non-parallel gap is formed between said beam and said recess in a state in which no electrostatic force acts on said beam, said non-parallel gap being generally rectangular between a plane including the upper surface of said substrate and said beam.

67. The light modulator according to claim 66, wherein

said beam is a both-end-fixed beam having both ends fixed to the upper surface of said substrate, the fixed both ends of said beam being generally L-shaped.

68. The light modulator according to claim 66, comprising:

a support proximate to a fixed end of said beam to assist in recovery of said beam when the electrostatic force acting on said beam is released.

69. The light modulator according to claim 68, wherein

said support is made of a material equal to a material of the beam.

70. The light modulator according to claim 66, wherein

said beam consists of a film having a tensile residual stress.

71. A method of manufacturing a light modulator modulating light by deforming a beam which reflects light, by an electrostatic force, wherein

an electrode acting the electrostatic force on said beam is provided inside a recess of a substrate opened to an upper surface of said substrate, said beam held by said substrate at a position opposed to said electrode so as to be projected from the upper surface of said substrate; and

a non-parallel gap is formed between said beam and said recess in a state in which no electrostatic force acts on said beam, said non-parallel gap being generally rectangular between a plane including the upper surface of said substrate and said beam, the method comprising the steps of:

forming said recess in said substrate;

forming said electrode inside said recess;

forming a protection layer which covers said electrode;

depositing a sacrificial layer on an entire surface of said substrate;

patterning said sacrificial layer to correspond to said beam by a photo-engraving method;

forming said beam; and

removing said sacrificial layer.

72. A method of manufacturing a light modulator modulating light by deforming a beam which reflects light, by an electrostatic force, wherein

an electrode acting the electrostatic force on said beam is provided inside a recess of a substrate opened to an upper surface of said substrate, said beam held by said substrate at a position opposed to said electrode so as to be projected from the upper surface of said substrate;

a non-parallel gap is formed between said beam and said recess in a state in which no electrostatic force acts on said beam, said non-parallel gap being generally rectangular between a plane including the upper surface of said substrate and said beam; and

said light modulator includes a support proximate to a fixed end of said beam to assist in recovery of said beam when the electrostatic force acting on said beam is released

the method comprising the steps of:

forming said recess in said substrate;

forming said electrode inside said recess;

forming a protection layer which covers said electrode;

depositing a sacrificial layer on an entire surface of said substrate;

patterning said sacrificial layer to correspond to said beam by a photo-engraving method;

depositing an entire surface of a layer which constitutes said support;

etching-back said layer which constitutes said support by anisotropic dry etching, and leaving said layer which constitutes said support on an end section of said patterned sacrificial layer;

forming said beam; and

removing said sacrificial layer.

73. A light modulator, wherein

a fixed electrode, a beam which is opposed to said fixed electrode through a gap and which has a light reflection surface, and a light emission element are formed in a same package;

said beam is held to be deformable toward said fixed electrode by an electrostatic force when said beam is driven, light emitted from said light emission element is reflected by said light reflection surface on said beam in different directions between a case in which said beam is driven and a case in which said beam

is not driven, and reflection light from said reflection surface is outputted to an outside of the package when said beam is driven or not driven.

74. The light modulator according to claim 73, wherein said beam is a both-end-fixed beam.

75. The light modulator according to claim 73, wherein said light emission element is an electroluminescence element.

76. The light modulator according to claim 73, wherein said fixed electrode and said beam are formed on a same substrate, and said light emission element is formed on a package upper cover connected to said substrate while being opposed to said beam.

77. The light modulator according to claim 76, wherein a convex section which converges the light emitted from said light emission element on said beam, is formed on said package upper cover.

78. The light modulator according to claim 73, wherein said fixed electrode, said beam and said light emission element are formed on a same substrate, and a concave mirror, which

converges the light emitted from said light emission element on said beam, is formed on a package upper cover connected to said substrate.

79. The light modulator according to claim 73, wherein

said fixed electrode, said beam and said light emission element are formed on a same substrate, and a waveguide path, which guides the light emitted from said light emission element into said gap, is formed in said substrate.

80. The light modulator according to claim 73, wherein

a shielding film is formed on a package upper cover, and the light reflected by the light reflection surface on said beam is outputted to an outside of the package through a window provided in the shielding film.

81. The light modulator according to claim 73, wherein

the light emission element does not emit light while the beam is deformed.

82. A light modulator modulating light by changing a reflection direction of incident light, comprising:

a reflection unit which regularly reflects the incident light;

a thin film, both-end-fixed beam which is formed out of a

thin film constituted to be combined with said reflection unit, which has both ends fixed, and which is deformed by an electronic force, said light reflection unit provided on one surface of said thin film, both-end-fixed beam;

a substrate electrode which is opposed to the other side surface of said thin film, both-end-fixed beam, and which applies a driving voltage;

a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam;

a substrate which has said substrate electrode formed in a bottom of said gap, and which holds both ends of said thin film, both-end-fixed beam; and

a cover member which is formed to be attached onto said substrate, which includes said thin film, both-end-fixed beam and said gap in a vacuum space, and which is made of a light transmission material.

83. The light modulator according to claim 82, wherein said thin film, both-end beam is made of a monocrystalline silicon thin film.

84. The light modulator according to claim 82, wherein said thin film, both-end beam is made of a polycrystalline silicon thin film.

85. The light modulator according to claim 82, wherein said thin film, both-end beam is made of an amorphous silicon thin film.

86. The light modulator according to claim 82, wherein said thin film, both-end beam is made of a silicon nitride thin film.

87. The light modulator according to claim 82, wherein said thin film, both-end beam is made of a metallic thin film.

88. The light modulator according to claim 82, wherein the gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam, is non-parallel.

89. The light modulator according to claim 82, wherein a part of or all of said thin film, both-end beam is abutted on a bottom of the gap formed on said substrate when said thin film, both-end beam is deformed by an electronic force which is generated when said substrate electrodes applies the driving voltage.

90. The light modulator according to claim 82, wherein said substrate is made of monocrystalline silicon.

91. The light modulator according to claim 82, wherein said substrate is made of optical glass.

92. The light modulator according to claim 91, wherein said substrate is made of a transparent conductive film.

93. The light modulator according to claim 82, wherein said cover member is made of a glass material.

94. The light modulator according to claim 82, wherein a getter material is formed in the vacuum space formed by said substrate and said cover member.

95. The light modulator according to claim 82, wherein an attachment section which attaches said substrate to said cover member, consists of a metallic seal layer.

96. The light modulator according to claim 82, wherein a difference in coefficient of thermal expansion between said cover member and said substrate is not more than 0 to 30%.

97. The light modulator according to claim 82, wherein said cover member has at least one of a lens, an anti-reflection film and a shielding film formed in a path of the incident light on said reflection unit.

98. The light modulator according to claim 82, wherein said cover member has at least one of a lens, an anti-reflection film and a shielding film formed in a path of reflection light from said reflection unit.

99. The light modulator according to claim 82, wherein said cover member comprises an engraved section formed in an attachment section attached to said substrate.

100. The light modulator according to claim 82, wherein said thin film, both-end-fixed beam formed on said substrate is hexagonal-shaped.

101. The light modulator according to claim 82, wherein a plurality of light modulators are arranged in a form of one of a one-dimensional array and a two-dimensional array.

102. The light modulator according to claim 101, wherein said plurality of light modulators are arranged in a staggered fashion in the form of one of the one-dimensional array and the two-dimensional array.

103. A method of manufacturing a light modulator which modulates light by changing a reflection direction of incident light, and which comprises: a reflection unit which regularly reflects the

incident light; a thin film, both-end-fixed beam which is formed out of a thin film constituted to be combined with said reflection unit, which has both ends fixed, and which is deformed by an electronic force, said light reflection unit provided on one surface of said thin film, both-end-fixed beam; a substrate electrode which is opposed to the other side surface of said thin film, both-end-fixed beam, and which applies a driving voltage; a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam; a substrate which has said substrate electrode formed in a bottom of said gap, and which holds both ends of said thin film, both-end-fixed beam; and a cover member which is formed to be attached onto said substrate, which includes said thin film, both-end-fixed beam and said gap in a vacuum space, and which is made of a light transmission material, wherein

said gap, which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam, is formed on said substrate, a sacrificial material layer made of a sacrificial material is formed to flatten said substrate, said thin film, both-end-fixed beam is formed, said sacrificial material layer is removed and then said cover member is attached onto said substrate, thereby forming said light modulator.

104. The method of manufacturing a light modulator according to claim 103, comprising:

a gap formation step of forming said gap which is formed

on said substrate by opposing said thin film, both-end-fixed beam to said substrate electrode, by a thin film formation method or a micromachining method;

a substrate electrode formation step of forming all of or a part of said substrate electrode on the bottom of said gap on said substrate;

a sacrificial material layer formation step of forming said sacrificial material layer made of said sacrificial material, in said gap on said substrate, and then polishing and flattening said sacrificial material layer;

a thin film, both-end-fixed beam formation step of forming said thin film, both-end-fixed beam on said sacrificial material layer;

a sacrificial material layer removal step of removing said sacrificial material layer in said gap;

an opening section formation step of forming an opening section which connects said substrate electrode to an outside; and

a cover member attachment step of attaching said cover member onto said substrate.

105. The method of manufacturing a light modulator according to claim 103, wherein

said cover member attached onto said substrate by said attachment section is manufactured at a formation step which comprises:

a cover member substrate formation step;

a lens formation step;

an engraved section formation step; and

a shielding film formation step.

106. An image formation apparatus forming an image by wiring optical data by an electrophotographic process, comprising:

an image carrier which is rotatably held, and which carries a to-be-formed image;

a latent image formation unit which forms a latent image by writing the optical data on said image carrier, and which consists of a light modulator, said light modulator which modulates light by changing a reflection direction of incident light, and which comprises: a reflection unit which regularly reflects the incident light; a thin film, both-end-fixed beam which is formed out of a thin film constituted to be combined with said reflection unit, which has both ends fixed, and which is deformed by an electronic force, said light reflection unit provided on one surface of said thin film, both-end-fixed beam; a substrate electrode which is opposed to the other side surface of said thin film, both-end-fixed beam, and which applies a driving voltage; a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam; a substrate which has said substrate electrode formed in a bottom of said gap, and which holds both ends of said thin film, both-end-fixed beam; and a cover member which is formed

to be attached onto said substrate, which includes said thin film, both-end-fixed beam and said gap in a vacuum space, and which is made of a light transmission material;

a development unit which develops the latent image formed by said light modulator of said latent image formation unit, and which forms a toner image; and

a transfer unit which transfers said toner image formed by said development unit onto a to-be-transferred body.

107. An image projection and display apparatus projecting and displaying an image, comprising:

a light switching unit which consists of a light modulator, said light modulator modulating light by changing a reflection direction of incident light, and comprising: a reflection unit which regularly reflects the incident light; a thin film, both-end-fixed beam which is formed out of a thin film constituted to be combined with said reflection unit, which has both ends fixed, and which is deformed by an electronic force, said light reflection unit provided on one surface of said thin film, both-end-fixed beam; a substrate electrode which is opposed to the other side surface of said thin film, both-end-fixed beam, and which applies a driving voltage; a gap which is formed by opposing said substrate electrode to said thin film, both-end-fixed beam; a substrate which has said substrate electrode formed in a bottom of said gap, and which holds both ends of said thin film, both-end-fixed beam; and a cover member

which is formed to be attached onto said substrate, which includes said thin film, both-end-fixed beam and said gap in a vacuum space, and which is made of a light transmission material; and

a projection screen displaying the image projected by said light modulator of said light switching unit.